Ordering Caterpillars!

Ordering caterpillars for your Butterfly World
You can purchase one set of 5 'Painted Lady' caterpillars, complete with special artificial foodstuff, at a special price of £9.50 (including postage & packing) from:
www.gribblybugs.com
On the website, select 'Shop', then 'Livestock Kits', then 'Caterpillar refill pot' When asked for your Discount code, enter the following:

This discount code is valid until September 31st 2015. Caterpillars are available from March 1st to September 31st. They can normally be dispatched within a couple of days, although as they are live creatures they cannot be sent when the weather is either extremely hot, or extremely cold, and supply is subject to availability. Should you wish to hatch more butterflies, further sets of caterpillars can be purchased from Gibblybugs at their published prices.

Interplay on the Web!
To get all the latest information about Interplay's range of products, visit **www.interplayuk.com**

Interplay UK Limited
Meter House, Fieldhouse Lane, Marlow,
Buckinghamshire. SL7 1LW
Designed by Interplay UK Limited
Made in China
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Manual written by Nick Baker
Product Code LW104 v1.0
Please retain our address for future reference.

Designed for children by Nature Experts

If you had fun with this kit, why not try some of the other kits in the My Living World range.

Explore the wonderful world of butterflies with naturalist Nick Baker!

Designed for children by Nature Experts

Nick Baker's

BUTTERFLY WORLD

- **The Amazing Butterfly Rearing Kit!**
- **Provides hours of fun and fascination!**
- **Everything included... just add caterpillars!**

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Important Safety Information!

This kit conforms to the following safety standards: Europe: CE and EN71 USA: ASTM

WARNING!

For children over 5 years of age only.
For use under adult supervision.
Read the instructions before use.
Follow them and keep them for reference.

Not suitable for children under 36 months due to small parts that could represent a choking hazard.

None of the accessories in this kit should be allowed to come into direct contact with foodstuffs.

Wash hands after using this kit or the activities contained in this booklet.

About this Kit

This kit is a hands-on nature study kit that contains the equipment required to observe and study the fascinating life cycle of butterflies. It is designed to be fun and informative for kids of all ages. However, young children will need the help and supervision of an adult.

To enjoy the best results from this kit follow the instructions carefully and please treat the creatures in your care responsibly.

Finally, I hope you have fun with this kit and discover some truly fascinating insights into the wonderful world of butterflies.

To get all the latest information about Interplay's range of products, visit **www.interplayuk.com**

Interplay UK Limited
Unit D, Meter House, Fieldhouse Lane, Marlow, Buckinghamshire. SL7 1LW

Your Kit Contents

You should find the following components in your kit:

- **Pop Up Butterfly Cage**
- **Paint Brush**
- **Net Jar Cover and Elastic Band**
- **Small Plastic Pot and Lid**

In the unlikely event that any of the components are missing, please call our Customer Services Helpline on 01628 488525.

Introduction

A butterfly's life cycle is one of nature's most amazing transformations. From a tiny bead of an egg that hatches into a leaf munching caterpillar that turns to a sculptural still-life of a chrysalis and finally transforms to the flying work of natural art that is the adult butterfly.

Each and every one of these stages in a butterfly or moth's life is full of fascination and the final act as the butterfly breaks out of its chrysalis to become the familiar insects we might see in the garden or park is one of life's truly magical moments. Inside this kit is all you need to truly blow your mind and witness all this and more for yourself!

In the UK we have 72 regularly occurring different kinds of butterfly and a staggering 2,400 different kinds of moth! So there is plenty in the way of variety, colour and some incredible behaviours to witness. Learning about these fascinating insects and their lives is one of the most satisfying hobbies.

Sadly, with the exception of a few tolerant kinds, nearly all of our species are declining, so the understanding and conservation of these insects is really important and there are still loads of things to find out and understand about them…All the more reason to start a love affair with butterflies and moths!

Butterfly Eggs & Caterpillar

Butterfly Chrysalid

Adult Butterfly

Getting Started...

There are two ways you can use this kit:

1. If it is the spring or summer, you could do what I did as a young boy and go out and find your own butterfly or moth eggs and caterpillars to rear. It's the best way to get to know the creatures that live around your home and you will get to meet a whole manner of very different looking beasts and learn loads as you're doing it!

2. The other option for those who simply cannot wait to get started is to send off for some captive bred caterpillars of the Painted Lady butterfly and rear these for yourselves. This is a great introduction to butterflies and their life-cycle and is a brilliant way for beginners to get started in this fascinating hobby.

Of course, there is nothing stopping you doing both!

The Quick Start...

1. Send off for your Caterpillars.

The quickest and simplest way to use this kit is to get your hands on some of our captive reared Painted Lady butterfly caterpillars. You can do this by sending off for them using the details on the outer rear cover of this booklet.

These will arrive in a clear plastic container, complete with an artificial diet (that's the brown paste that is on the sides of the pot). You will notice the pot has a clear plastic lid with a couple of air holes and underneath this is a sheet of special paper (this allows ventilation and protects the caterpillars inside - stopping disease and parasites from getting in and also provides them with somewhere to hang themselves up once they are ready to form a chrysalis, but more about this later.

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2. Sit back and watch them grow.

When your caterpillars arrive you should have five in a pot and, although they have everything they need to feed and grow, there are a few tips and bits of information you will need to know for both you and the 'fab five' to get the most out of the situation.

- Make sure the pot is standing the right way up (with the lid at the top) this means the caterpillars can go about their business correctly. The kit has been carefully designed to function this way. The caterpillars will eat the food and their droppings (the posh word for which is frass and are the little rounded balls you will see) will fall into the middle. The caterpillars will also moult their skins (more about this later) on the sides of the container.

- Don't put anything over the top of the pot, this will hamper the air flow and could cause problems such as mould growth.

- Keep your caterpillars out of direct sunlight and away from window sills. When sun light passes through windows it tends to cause huge spikes in temperature enough to kill and then cook your caterpillars. Ideally room temperatures between 18-25°C are perfect.

- There should be no reason to remove the lid from the pot containing the caterpillars. Doing so will risk contaminating the artificial food (this is easily done, fingers can introduce microscopic bacteria and fungal spores which could cause contamination which might kill your caterpillars). In the unlikely event you do get some mould develop or one of your caterpillars dies - then using tweezers/forceps try and remove the offending item as quickly as possible causing as little disturbance to the other insects as you can.

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- While we're on the subject try not to jiggle the pot around too much, tap on the sides or shake the pot. All of these actions can cause disturbance to your caterpillars and while they are pretty tough, if they are going through a skin moult or forming a chrysalis they can be pretty soft and delicate.

Food for thought

The artificial diet, whilst it doesn't resemble the leaves of Thistles and other plants this species feed on in the wild, does provide them with all they need to develop and grow well. In case you wanted to know, this special mix contains Soya and is proven to be better for the caterpillars than other artificial foods based on agar (an extract of Seaweed).

3. All change...

It takes about a couple of weeks for your caterpillars to reach the next stage of development (this depends quite a bit on temperature and of course what age they were when they arrived). But once the caterpillars are fully grown they start preparing to leave behind their life as a small saggy, baggy food processing unit forever and moult to reveal the chrysalis.

Your caterpillars will be around 3-4 cm long at this stage. They'll become restless, stop feeding and wander around the pot. You may also notice that they start spinning more silk on the sides and the lid of the pot. Eventually they'll attach themselves to a little silk pad that they've spun on the lid and hang down in a 'J' shape. They'll remain this way for a day or so, then after a lot of struggling and twitching, split behind the head to reveal the chrysalis underneath.

Wait until all your caterpillars have gone through this critical moult and then it's time to prepare them for the big finale of their life cycle, transformation to the adult butterfly!

What to do when they drop off!

Sometimes your caterpillars or chrysalis will fall off the lid, often when they are disturbed by their wandering brothers and sisters. Don't panic. Just wait for all of them to change into chrysalises, then wait a **further** 2 days (The chrysalis when it is first formed is still very soft and easy to damage, so it's best to wait for it to harden in the air first before touching it!)

Then very carefully remove the plastic lid and then the papery one beneath (taking care not to disturb those that are still attached. Very gently pick up the chrysalises that have fallen off. Then gently scrape the pointed tip (tail end) of the chrysalis over a pad of cotton wool. By doing this a tiny set of hooks called a Cremaster will snag the cotton wool fibres and then when you've got a little tuft of cotton wool attached to the chrysalis, give it a little twizzle between forefinger and thumb. Then using a dab of super glue on the cotton wool strand, you can carefully and gently stick it to the papery lid next to the others - leave it to dry and then proceed to the next stage

Peacock Butterfly

Red Admiral Butterfly

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4. Moving house

Wait until a couple of days after the last caterpillar changes. It takes this long for the chrysalises to harden up properly and be robust enough for moving. Take off the plastic lid and carefully lift off the paper one, complete with chrysalises. Then use the double-sided sticky pads provided to attach this to the roof of the large net cage.

Small Tortoiseshell Butterfly

Now you just need to wait for your butterflies to emerge. The amount of time that you'll have to do this will depend again on temperature but usually around 10 - 14 days. Just before emergence the chrysalises will darken and the colours of the butterflies wings will start to show through the chrysalis. It's always a good idea to keep your chrysalises healthy and help with the emergence of the adult butterflies by spraying them regularly with water - a mist spray picked up from a garden centre is ideal or an even cheaper way is to get water on a nail or tooth brush and flick the bristles, running your fingers through them has the effect of creating a fine spray as well.

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5. The Grand Opening..

When they do finally emerge the butterflies should crawl out of the suspended chrysalises and then hang from the top of the cage while they pump their wings full of blood and then harden off. It is really important not to disturb them while they are doing this as they are incredibly fragile and if they fall and can't get up again they risk their wings setting in a warped way and you might end up with 'crippled' butterflies that can't fly. Don't try and rush things, they will start to fly around when they are ready.

When the butterflies emerge a red liquid called meconium (a blood like substance) is released and may become visible on the sides or base of the butterfly cage. Do not be alarmed as this is a natural part of the process.

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A word on the word...

Chrysalis is a lovely word, derived from the Greek word chrysós for Gold and if you look at your Painted Lady chrysalises you can see why. Many other species of butterfly have these shiny, mirrored surfaces built into their chrysalises in order to camouflage them by reflecting light and colours around.

Oh and if you've got one, it's a chrysalis, but if you have more than one they are referred to as 'chrysalises' or 'chrysalides'. Normally it is the pupa stage of the butterfly that is called a Chrysalis while that of a moth is simply a Pupa (or pupae if there are more than one) and this word also comes from the Greek language for doll or puppet.

Incidentally a cocoon is a covering, that goes over the pupa (most often found in moths) and this can be made of silk, hairs and even bits of plant material depending on the species.

Peacock Butterfly

Now you have choices - you can keep them in your cage for a while to study them. Feed them on a 10% honey solution (See recipe) served up on cotton wool pads. If you keep them in the sunshine and feed them they may even mate and start the whole process over again! Although you will need to pot up some thistle plants to encourage the females to lay eggs.

When you've finished watching them you can release the adults outside. Painted Ladies are well travelled insects and because they are migrants they can be found all over the world. In the UK they are very widespread and have been found in every month of the year, so as long as the weather isn't too awful your butterflies should get on fine. If you release them in your garden and there are plenty of flowers in bloom, they may even stay a while.

Feeding your Butterflies

Your Painted Lady will take well to pads of cotton wool or even colourful sections of sponge soaked in a sweet solution of 10% honey solution (around five teaspoons of honey dissolved in a small glass of water). Don't use sugar and if the pads/cotton wool dries out, don't just top it up with water or solution. Take the whole thing out and either rinse it or replace with a fresh one - the reason being is that there is a risk that the solution will reach concentrations that will crystallise in your butterflies long thin tube-like mouthparts (proboscis). You can also put fresh cut flowers - large daisies, thistle and Buddleia are all good in with your butterflies.

A bit more about your Painted Ladies

The Painted Lady butterfly, also known by its scientific name Vanessa cardui (va-NESS-uh-Car-doo-eye) is quite a stunning insect. Its wings are bedecked in a very rich peachy pink background colour, with black and white markings, some of which to me echo the shapes found in the leaves of its main food plant in the wild, Spear thistle.

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Painted Lady Butterfly

Painted Ladies like it quite hot (they need to get their bodies up to around 27°C to be active) and those we see in the UK originate in North Africa and migrate North breeding as they go. When they arrive on our shores (which can happen in any month from March onwards) they will lay their beautiful light green eggs, singly on the leaves of Thistles. They will sometimes also choose leaves of Mallows, Stinging Nettles and a plant called Viper's Bugloss. Because of their long distance wanderings and the fact the caterpillars feed on commonly found plants. They are an incredibly widespread species and can be seen almost anywhere in the UK in good years. This is why they make a good species to rear as releasing them will not interfere with the wild situation. Also, they cannot survive our winter weather so when temperatures get colder in autumn, adult Painted Lady butterflies migrate south towards southern Europe and North Africa.

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Painted Lady Butterfly

The Call of the Wild...

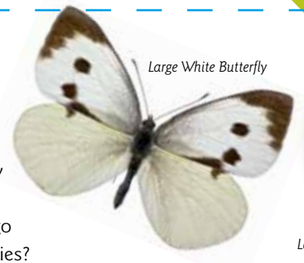
Catching your Cats...

So now you've reared some Painted Lady Butterflies, maybe you feel ready for the next stage? Maybe you want to have a go at rearing and studying some other species? Well you can, believe it or not, purchase by mail order a wide variety of butterflies and moths, from little native species to giant Hawkmoths. Please see the contact details for a couple of suppliers I recommend at the back of this booklet.

Alternatively, you could also have a go at finding your own caterpillars in the wild... But where do you start? How do you find wild caterpillars?

There are several ways to do this but the easiest by far is to search in the right sorts of plants for our more common wild species. However, what you find will depend very much on where you live and what time of the year it is.

A few common species that you can find all over the place...



Large White Butterfly

Large White Butterfly - Chrysalis

Large White - Caterpillar

Large White - This is a very common 'Cabbage White' and although it is considered a bit of a garden pest it still is a remarkably fascinating insect (and the first species I ever reared as a small boy). Search for the clusters of tiny, yellow skittle shaped eggs or the stunning yellow, blue/grey, black and yellow speckled caterpillars on the leaves of Nasturtiums and cabbages in Summer.

Small White Butterfly

Small White - This is the smaller cousin of the Large White and its caterpillars and eggs can be found relatively easily on cabbages throughout the summer months. For both of these 'Cabbage' whites you could buy a small potted sacrificial cabbage from a garden centre and simply leave it in the garden - the butterflies will eventually find it and then you can move the whole plant - plus the eggs into your cage and watch the whole life cycle unfold.

Small White Butterfly - Chrysalis

Small White Butterfly - Caterpillar

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Small Tortoiseshell & Peacock Butterfly

Both of these species feed on stinging nettles, but they are quite fussy. Not any old stinging nettle will do, they like the very lush, juicy new growth, in bright sunshine and large patches of these are best (although I have found them on small straggly little plants, they are always in open places). Search in summer for the tell-tale silk 'trails' they leave as they move and feed - these caterpillars like to hang out in big gangs and tend to be quiet easy to spot. When collecting a few of these (don't take the whole lot) hold the pot underneath and just tickle them in - they have a tendency to roll up and roll off the leaves at the slightest hint of disturbance. Nettle patches are probably one of the greatest places to search for other species as well (although it would be much handier if the nettles didn't sting!) Look out for rolled up leaves - sometimes these will be the 'tents' of Red Admiral and if you see a caterpillar that looks a bit like a bird dropping this belongs to the Comma - an insect with one of the most splendid chrysalises of all.

Small Tortoiseshell Butterfly

Peacock Butterfly

Comma Butterfly

Red Admiral Butterfly

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Moths tend to be a bit more difficult to find by cold searching and usually I tend to use another technique called 'bush beating'.

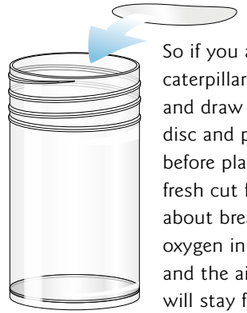
For this simply get a large white sheet and spread this out underneath an overhanging hedge or tree branch and then using a stout stick give the branch a good hard, sudden tap. The idea is that any caterpillars quietly feeding away will be taken by surprise and lose their grip and fall onto your sheet, then it's just a case of collecting up those that interest you in your plastic pot or a jam jar. Make a note of the identity of the tree or shrub, so that you know what to feed them.

It's important when moving your caterpillars around not to touch them or pick them up. Even little fingers are kind of big and clumsy and you may damage their delicate bodies, either by squashing them or from the chemicals on your skin. Also some of the hairy caterpillars can get you back! Their hairs are covered in nasty chemicals and their barbed nature means they can rub off or get stuck in your skin and give you a nasty rash or an allergic reaction. So it's best to gently pick up small ones with the paint brush provided, or use it to persuade them to walk onto or into what you want.

Keeping your Cats...

Basic principles of rearing caterpillars are very simple. It's all about providing for your insects daily requirements as far as food goes (some will increase in body weight 1000 times) and the rest is maintaining cleanliness to avoid disease and then suitable conditions for them to pupate in. It's that easy!

In your kit you will find a small plastic pot. This is for transporting caterpillars home and also for very small caterpillars or eggs, such a pot is really handy - it might seem quite small but tiny caterpillars can wander off their food plant and get lost and starve to death if the container is too big, as they really are not very smart.



So if you are keeping and rearing small caterpillars take a sheet of kitchen paper and draw around the pot - cut out this disc and place it in the bottom of the pot, before placing the caterpillars and some fresh cut food plant inside. Don't worry about breathing holes, there is plenty of oxygen in the pot to last them for days, and the airtight seal means the food plant will stay fresh.

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Change the food plant daily - a top tip is to let the caterpillars walk off the old and onto the new themselves and when they've done so, remove everything. Replace the old kitchen towel and remove any droppings (frass) and give it a wipe down (every two days wash out with hot soapy water and dry well) and in a week or so your caterpillars will be big enough (over 1cm is a guideline but it does depend on species) to transfer to a bigger container.

I use jam jars for the next stage as they are handy and most households have one or two sitting in a cupboard somewhere. Again line them with kitchen towel and keep the food plant fresh by keeping the cut end in a small pot or tube stuffed full of wet kitchen towel, tissue, sand or cotton wool. Use the net lids and elastic bands supplied as a lid, this allows air to circulate, which is important now that your caterpillars are growing up.

Keep an eye on your caterpillars; enjoy watching them and noticing the little details in their lives. Do they hold themselves in a particular way when resting, do they feed at night, build a hideout from silk or rolled up leaves, maybe they have a particular way of reacting if disturbed? All these things are little tricks that they use to survive in the wild, and by keeping and studying them in captivity you will really get to know these amazing little insects.

Most species have a daily routine, just like you and me. But every now and then they have to go through some changes.

Like all insects, in order to grow they need to moult their skins (usually four times between hatching from an egg and forming a Chrysalis or Pupa) When they are about to do this, they will stop moving. Look closely and you might notice they've spun a small silk pad (using silk glands in their heads, they also appear to bulge behind the head). They may do this on the food plant or on the side of the container. It's very important not to disturb them by touching them or trying to get them to move when they are in this state - in time their old skin will burst and the new caterpillar will crawl out, leaving behind the old skin like an old wrinkled sock.

As your caterpillars get bigger, you might want to transfer them to an even bigger container like your pop up net cage. This has the advantage of giving your insects more space and you'll find keeping up with their increasing appetite much easier! You will now be able to feed them with much bigger meals by providing them with cut stems of the food plant.

The same principles apply to keeping them clean and again you can keep the food plant fresh by placing the cut ends of the stems in pots of water plugged with cotton wool or flower arranger's oasis or sand soaked in water. The idea is to keep your caterpillars from drowning themselves - I did say earlier they are not very bright!

Peacock caterpillars shedding their skin. The ones with pale spines have just shed their skin, the caterpillar in the foreground is just shedding.

When the caterpillars have done all the eating and all the growing they can they are ready to form a chrysalis (butterfly) or pupate (moth). The caterpillars will change their behaviour and often their appearance - they will go off their food and start to walk around with some urgency and in some species, particularly noticeable in moths, the caterpillars will change colour and darken.

Peacock Butterfly

The best thing you can do now is provide them with somewhere to complete the change - this varies from species to species. Some species will be OK as they are and will settle down in a corner of the cage, butterflies will simply hang from the ceiling or the sides - you can provide them with more choices by putting some twigs and plant stems in the cage at this time. Moths have varied habits depending on what species they are (a little research on line or in the library should help you) but if in doubt - you could provide some dead leaves, bark and some twigs. Egg boxes are quite useful for some moth species while others will need a tray or pot of deep soil in which to bury themselves.

To witness the most magic part of the transformation you now have to wait… how long you have to do this is very much down to the species you've got, the time of the year and the temperature.

Some species will emerge within a couple of weeks, others may overwinter - the critical thing is to keep the humidity up by keeping any soil damp to the touch and those that are above the soil surface sprayed with water every few days. This is to stop them drying out and making emergence much easier.

Important Note!

It's really important especially when you are dealing with creatures that you've collected in the wild, to let them go again at exactly the same spot you found them and never, ever release exotic, captive bred animals (except your Painted Ladies) into the wild. If they are from another country it is illegal to do so and for species that are native you could be interfering with wild populations and confusing a lot of butterfly scientists in the process.

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Further Reading...

Nick Baker's Bug Book I wrote this to be a good little general guide to garden creepy crawlies, so hopefully you'll agree with me. It's a practical guide to the invertebrates that share our lives and contain a section of butterflies and moths.

Nick Baker's Bug Zoo This is another book I wrote to help those who want to keep creepy crawlies including a section on butterflies and moths. A book that encourages exploration, respect for life and responsibility by engaging the younger audiences in some 'jam jar science.

Breeding the British Butterflies
by Peter Cribb A good little book covering the different species, food plants, breeding.

Butterfly Culture - *A Guide to Breeding Butterflies, Moths and Other Insects by John L.S. Stone & H.J. Midwinter.* This is a great little book and one that is still available second hand.

Guide to Garden Wildlife - *Richard Lewington.* Anyone who has a garden and has any kind of interest in other creatures that share it with us needs to have a copy of this excellent book.

Websites to Visit

http://butterfly-conservation.org
Is the charity dedicated to looking after our moths and butterflies and their habitats. The website is full of loads of great information about butterflies and their conservation and how you can get involved or become a member.

http://www.ukbutterflies.co.uk/index.php
A good information site, loads of information and photographs of nearly all stages of the life cycle of our British species.

http://munchingcaterpillars.org/
An educational initiative for young people and schools to help them understand, study and encourage a love of caterpillars - some good online resources for kids, mums and teachers alike

Butterfly Suppliers

'Gribblybugs' - a specialist supplier of butterflies and moths, as well as equipment. You will find a Gribblybugs discount code on the rear cover of this booklet, enabling you to purchase the Painted Lady butterflies recommended for first-time users.
www.gribblybugs.com

NHBS (stands for Natural History Book Services) is more than a book shop and is an excellent place for any naturalist to mail order the things they need such as pots, pooters and nets. **www.nhbs.com**

Worldwide Butterflies - Has been supplying live butterflies and moths for many years. I remember saving up for some Privet Hawk-moth caterpillars from here when I was little boy.
http://www.wwb.co.uk/

Heart of England Butterflies-
Another supplier of livestock for those who want to take their hobby further.
http://www.heartofenglandbutterflies.com

Nick Baker

About the Author

Nick Baker is a professional naturalist whose career has taken him from being a field ecologist working on birds, butterflies and badgers to top TV broadcaster. Best known for his wildlife programs on BBC, Animal Planet, Discovery and National Geographic. He has had many adventures with many species from gorillas to polar bears, but his real love is that of the wildlife in his own garden, the little things that make the world go around - it was the insects and other invertebrates that started him off as a kid and to this day still hold a very special fascination.

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Nick's TV programmes include:

The Really Wild Show
Nick Baker's Weird Creatures
Nick Baker's Beautiful Freaks

Nick has written over 12 nature study books; titles include:

My First Cockroach
Nick Baker's Bug Book
Nick Baker's British Wildlife
The New Amateur Naturalist
Habitat Explorer Guides
Nick Baker's Bug Zoo

Dedicated to conservation, Nick is involved with many wildlife charities and trusts:

Vice President - Butterfly Conversation Trust
Vice President - (Youth) RSPB
Vice President - The Wildlife Trusts
President - Bug Life

To find out more about Nick and his many achievements visit his website: ***www.nickbaker.tv***